ECS Configuration Change Request

1. Originator	2. Log Date:	3. CCR #:	4. Rev:	5. Tel:	6. Rm #:	7. Dept.
Evan Winston	1-17-01	01-0844	—	301.925.0348	2013	DEV/CO

8. CCR Title: Test Executable 5B.06_TOOLKIT65.04 to the DAACs, PVC and VATC. NCR 29462: allow AIRS to produce multiple-valued, non-duplicate, non-ordered PSAs within a single granule, set by the PGE.

9. Originator Signature/Date	10. Class	11. Type:	12. Need Date:
1/17/01	II	CCR	17Jan2001

13. Office Manager Signature/Date	14. Category of Change:	15. Priority: (If "Emergency" fill in Block 28).
1/17/01 for	Other	Emergency

16. Documentation/Drawings Impacted:	17. Schedule Impact:	18. CI(s) Affected:
N/A	N/A	TOOLKIT

19. Release Affected by this Change:	20. Date due to Customer:	21. Estimated Cost:
5B	n/a	None - Under 100K

22. Source Reference: ☒NCR (attach) ☐Action Item ☐Tech Ref. ☐GSFC ☐Other:
NCR 29462 corrction provided with this TE.

23. Problem: (use additional Sheets if necessary)
Currently ECS cannot support the production of multiple-valued PSAs. This is within scope of ECS, and is required by AIRS. TOOLKIT needs to provide a workaround to allow AIRS to produce multiple-valued, non-duplicate, non-ordered PSAs within a single granule, set by the PGE. Workaround is being recommended based on the analysis done in conjunction with ESDIS at a meeting on 04Jan01. An action item was assigned to the TOOLKIT to disable its NUM_VAL checking as the workaround. (Information continued on page three.)

24. Proposed Solution: (use additional sheets if necessary)
CM> Build full flavor IRIX 6.5 TOOLKIT TAR files from current 5B baseline and provide to the SMC ('full flavor' build was completed during Jan 13-14 2001).
Instructions to the SMC: make these TAR files available to the DAACs.
This Toolkit TE is to be loaded on top of 5B.06 installations and can be used on IRIX 6.5 hosts only.
Discard TE 5B.06_TOOLKIT65.02 and .03 (obsolete).

25. Alternate Solution: (use additional sheets if necessary)
none

26. Consequences if Change(s) are not approved: (use additional sheets if necessary)
DAACs will continue to experience problems as noted by the NCRs listed above.

27. Justification for Emergency (If Block 15 is "Emergency"):
Needs to be delivered by 17 January 2001.

28. Site(s) Affected: ☐EDF ☒PVC ☒VATC ☒EDC ☒GSFC ☒LaRC ☒NSIDC ☒SMC ☐AK ☐JPL ☐EOC ☐IDG Test Cell ☐Other

29. Board Comments:	30. Work Assigned To:	31. CCR Closed Date:

32. EDF/SCDV CCB Chair (Sign/Date):	Disposition: (Approved) App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ECS
1/17/01	
33. M&O CCB Chair (Sign/Date):	**Disposition:** (Approved) App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ECS
1/17/01	
34. ECS CCB Chair (Sign/Date):	**Disposition:** Approved App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ESDIS

ORIGINAL

ADDITIONAL SHEET

CCR #: 01-0044 **Rev:** — **Originator:** Evan Winston

Telephone: x0348 **Office:** DEV/CO

Title of Change: Test Executable 5B.06_TOOLKIT65.04 to the DAACs, PVC and VATC. NCR 29462: allow AIRS to produce multiple-valued, non-duplicate, non-ordered PSAs within a single granule, set by the PGE.

DAAC INSTALL INSTRUCTIONS:

1. UNTAR the file and copy to the designated staging area.
___ a) Change to the platform staging directory:

cd /<distribution_directory>/<staging_directory>/SGI

NOTE!!!!!!!!!!
FOR ECS ASSIST to work, the name of the file in the stagging area MUST be "TOOLKIT".
You must look at this name and if it is NOT "TOOLKIT" then you have to change it:
move <'wrong-name'>/TOOLKIT/,
Then look at the file in the stagging area again to be sure it was changed correctly. Then proceed.

___ b) Execute the setup script (change the permissions on the script to 755 if necessary):

./<drop_name>_Setup.ksh ****requires root*******

___ c) At the prompt "Press ^C to Cancel, Any Other Key to Continue:", press any key except ^C.
___ d) At the "Continue? (Y/N):" prompt, enter Y
___ e) At the "Extract ECS tar packages? (Y/N):" prompt, enter Y
___ f) Verify that the staging area location is correct on the line "Install ECS Staging area to:
<distribution_directory>/<staging_directory>/SGI"
___ g) If correct, enter Y at the prompt "Enter ^C to Cancel, 'N' to change, 'Y' to continue:"
___ h) Verify that the following messages are received :
Cleaning up ... done.
Delivery setup is complete, you may now install ECS from staging area.
___ i) At the prompt "Update ECS Assist Common Files? (Root only)(Y/N)", enter Y
NOTE: To insure that the latest ECS Assist software is installed, be sure to answer "Y" in response to the prompt described in Step 1.i above.

2. Contiue with the normal install instructions for TOOLKIT installation from the 5B.06 Install Instructions.
Construction office is available to help with any install issues.

ORIGINAL

checking, immediately.
- At present, AIRS has disabled the production of multiple valued PSAs from their PGEs. AIRS to continue in this mode until a new ECS Science TOOLKIT is delivered. Non-ECS (non TOOLKIT) data providers can use method (i) right now.
- ECS to deliver new TOOLKIT to DAACs and SCFs.
- AIRS to reinstate multi-valued PSA production in their PGEs, and integrate with the new TOOLKIT.
- ECS to analyze risks-cost-usefulness of incorporating "correct" NUM_VAL attribute/value checking. If results are favorable, then the expected migration plan would be to update and re-deliver descriptors for only those ESDTs which will have multi-valued restrictions enforced for them. Otherwise, it is assumed that the remaining, unchanged ESDTs would have only 1 value per PSA per granule.

ACTIONS:
I) ECS TOOLKIT: Disable NUM_VAL checking immediately and test. Deliver TOOLKIT with change to DAACs and SCF.
PRIORITY: HIGHEST

II) ECS SYSTEMS ENGINEERING/AO: Perform analysis of risks/cost/usefulness of incorporating "correct" NUM_VAL attribute value checking.
PRIORITY: HIGH - DUE 01/19/01 to ESDIS
##

INFORMATION ON RESOLUTION:

Modified the code /ecs/formal/TOOLKIT/src/support/PGS_MET_LoadAggregate.c adding:

```
if(parentObject != NULL)
 {
   if(strcmp(parentObject->name, "ADDITIONALATTRIBUTESCONTAINER") == 0 ||
      strcmp(parentObject->name, "AdditionalAttributesContainer") == 0)
     {
       valueNode->item.value.integer.number =
                                  PGSd_MET_MAX_ARRAY_ELEMENT_SIZE;
     }
 }
```

With this modification the NUM_VAL value will change to PGSd_MET_MAX_ARRAY_ELEMENT_SIZE (which is currently 1000) during the initilzing MCF to the memory for the child objects of ADDITIONALATTRIBUTESCONTAINER object (such as ADDITIONALATTRIBUTENAME and PARAMETERVALUE objects). This allows multiple values to be set for single container.

INFORMATION ON VERIFICATION:

Tested with the test code in the directory /home/ataaheri/test_MET_NUMVAL with the MCF provided by Mike Theobald (AST_08#001.MCF). Were able to set multiple values for objects AdditionalAttributeName and ParameterValue after the fix.

CM01AJA00

ADDITIONAL DETAILS OF CHANGE (29482)

From meeting minutes on 04Jan01. Square brackets with [?] indicate strikethroughs from the minutes.

DISCUSSION:
Current ECS support of multiple values PSAs is summarized as follows:

1) PSA searches and results are supported from the EDG/ECS.
2) ECS does not preserve the order of multiple values from the .met file (no "ordered list" type).
3) ECS will fail the insert of a granule with duplicate PSA values for the same PSA.
4) As long as there are no duplicates, ECS will support the insert of multiple values of a PSA, for strings, integers and float types. There are 2 ways that a provider can supply the multiple values for a PSA. Each method has an ECS limitation.

(i) Single values in multiple containers: The provider must be sure to supply the multiple values as separate containers in the .met ODL, and not as lists within a single container. This means that the ODL container specifying the PSA attribute name must be repeated for every PSA attribute value. There are about 16 lines of ODL required for every value/attribute group. This could get tedious for very long lists of attribute values.

ECS limitations : While the data server will properly catalog multiple valued PSAs in this fashion, the ECS Science TOOLKIT will not generate multiple valued PSAs this way. Therefore, without a change to the TOOLKIT, this is not an option for ECS data providers, but for external providers only (those that may not use the TOOLKIT to generate .met files). For AIRS, this method is viewed as less favorable, because the resulting volume of ODL required by the data provider does not justify the changes required to the TOOLKIT.

(ii) Multiple values, single container: Another method which would greatly reduce lines of ODL would be for the provider to specify multiple values as lists. The additional attributes container would appear only once, but it would contain multiple value objects, one for each value assigned to the PSA.

ECS limitations: The TOOLKIT enforces a [cumulative?] maximum number of values (NUM_VAL) that a PGE can set for [all of?] its PSAs. [This limit is neither PSA specific nor PSA settable, but nevertheless,?] the TOOLKIT performs the NUM_VAL check on a per PSA container basis. NUM_VAL is settable in the descriptor, but unfortunately, the SDSRV always returns a value of 1 for NUM_VAL in the .mcf. If this number is exceeded, the TOOLKIT will not set the additional values in the .met file. (This is why the previous method of setting a single value per PSA container will work, because there will always only be 1 value associated with a container)
Previous internal discussions of this limitation suggested disabling the NUM_VAL check in the TOOLKIT as a quick, low cost short term solution. This is because the limit is currently being treated inconsistently anyway, across the TOOLKIT [(NUM_VAL as a cumulative maximum)?], descriptor (NUM_VAL as the maximum for a given PSA), and the SDSRV (doesn't care and doesn't support). This would be a small code change for the TOOLKIT and would not require descriptor, .mcf or SDSRV changes, so as a short term solution, it is more favorable.
More analysis was recommended regarding the usefulness, cost, and risks of applying "correct" attribute value restrictions. The goal would be to change the current NUM_VAL mechanism with one that allows the setting of attribute-specific restrictions from the descriptor, and their subsequent enforcement from the TOOLKIT.

DECISIONS - STRATEGY:
- In support of method (ii), the ECS Science TOOLKIT will disable NUM_VAL